This Technical Advisory describes an issue which may or may not affect the customer's product

Intel Technical Advisory

TA-1052-1

5200 NE Elam Young Parkway
Hillsboro, OR 97124

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Intel® RAID Controller with Intel® RAID Maintenance Free Backup Unit (RMFBU) May Remain in Write Back Mode With a Damaged RMFBU

Products Affected

The following Intel® Controllers that ship with a RAID Mantenance Free Backup Unit (RMFBU) or Intel® RAID modules or Intel® RAID Controllers that support an AXXRMFBU2, AXXRMFBU3, or AXXRMFBU4 RAID Maintenance Free Backup Unit as an accessory are affected by this issue:

RS25AB080	RS25SB008	RS25SB008 with AXXRPFKHA2
RMS25CB080	RMS25CB040	RMST3CB080
RMS25PB080	RMS25PB040	RMST3PB080
RS25ZB040	RS25ZB080LX	
RS3DC080	RS3DC040	

Description

Intel has found that in the rare occurrence that a RAID Maintence Free Backup Unit (RMFBU) has damaged electrical components, a RAID controller and attached RMFBU listed above that has an array set to allow for Write Back Cache may remain in Write Back mode when a scheduled RMFBU Learn cycle fails to successfully complete rather than being changed to Write Through mode as desired.

During a scheduled learn cycle, if user data buffered in write back cache of the RAID controller has not yet been committed to disk and the RMFBU has damaged electronics, the data in cache could be lost in the event of a unexpected power interruption.

Atypical damage to the electronics of the RMFBU is required for this undesired behavior to occur. An RMFBU subject to normal service wear is not expected to be impacted by this issue. In the case that an RMFBU wears to the point that it can no longer hold sufficient charge, the RMFBU will be marked by RAID firmware as failed and the RAID volume cache policy will be changed to Write Through mode until the RMFBU is replaced.

Root Cause

Intel has determined that when an RMFBU with damaged electrical components is used, the behavior of the RAID firmware managing the RMFBU may fail to detect the error and may fail to change the RAID volume's cache property to Write Through mode, and that the damaged RMFBU may not be able to provide sufficient charge to sustain a cache offload should the system power be unexpectedly interrupted.

Corrective Action / Resolution

Intel has developed a RAID controller firmware that will resolve this issue by properly setting the RAID volume's cache property to write through mode when the RAID firmware fails to successfully complete a learn cycle. Once the RMFBU successfully completes the learn cycle the cache property will be returned to Write Back cache mode. This firmware

update for the controllers listed in the table below is available on the Intel support website (Flash package v23.22.0-0020 with firmware version 3.340.55-3173).

RS25AB080	RS25SB008	
RMS25CB080	RMS25CB040	RMST3CB080
RMS25PB080	RMS25PB040	RMST3PB080

Follow-on firmware updates for these controllers will also include these changes.

A firmware update to resolve this issue for controllers listed in the table below has been developed and is in test, and is expected to be available on or before March 30th, 2014.

RS25ZB040	RS25ZB040LX

Intel is in the process of developing a firmware update for the controllers listed below, schedule of the release of this update will provided on or before March 30th, 2014.

RS3DC080	RS3DC040	RS25SB008 with AXXRPFKHA2

A firmware update that includes a fix to resolve this issue will be included in the factory build process for all RAID controllers and RAID modules listed above at the earliest opportunity, notification will be provided through Intel's standard Product Change Notification (PCN) process.

Workarounds

1. Install an Uninterruptable Power Supply: Customers with an Uninterruptable Power Supply supporting the server in question will not experience a power interruption which will lower the possibility of experiencing an issue.

2. Determine if the RMFBU is failed and cache policy remains in Write Back, customers running RAID Web Console 2 will be notified of this issue via a pop up warning message that the RMFBU has failed, and the RMFBU failure will be noted in the RAID log section of the main view of RAID Web Console 2. The RAID volume write policy should be verified to be in Write Through mode by navigating to the RAID Volume Properties view, and this cache policy should then be reverified 2 minutes later to be sure that the cache policty remains in Write Through mode while the RMFBU is in a failed state.

3. As an immediate workaround and precaution, customers may choose to manually set the RAID volume cache property to write through until the system can be updated with the RAID firmware that resolves this issue. This can be accomplished in one of three ways listed below:
    a. During power on POST, enter the BIOS Console utility by pressing ctrl+g when prompted, and navigate to the RAID volume properties section and change the RAID write cache property to write through.
    b. Within the operating system, install and launch the RAID Web Console 2 utility. Navigate to the virtual drive window and right click on the virtual drive, select modify virtual drive properties, select the RAID write cache property and change it to write through.
    c. From within the operating system or from within EFI, using the Command Tool 2 utility, send the following command to the RAID controller:

CmdTool2 -LDSetProp -WT -LALL -a0*

*Where -LAll= All logical drives and –a=controller number

Please contact your Intel Sales Representative if you require more specific information about this issue.

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Enterprise Platforms & Services Division
Intel Corporation